The Development of the U.S. Army Tele-Neurosurgery Consultation Network

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Background

The National Capital Consortium (NCC) Neurosurgical Program is the largest neurosurgical clinical service and quaternary referral center in the Department of Defense with all essential neurosurgical subspecialties represented, providing care of over 10,000 outpatients yearly for all forces of the US military services.

Our goal is to establish a hub in WRAMC that will provide real time tele-neurosurgical consultation to both fixed MTFs in North Atlantic Regional Medical Command and to Forward Medical Treatment Facilities.

1. Both real time interactive Video Teleconference consultation and store-and-forward consultation using Web-based clinical templates will be utilized to enhance rapid neurosurgical consultation between WRAMC and its domestic satellite clinics.
2. Interactive neurosurgical VTC between WRAMC and FMTF sites such as Afghanistan, Kuwait, Germany, and The Philippines using available technologies.

4 Missions

- Patient Care
- Education
- Research
- Readiness

Telemedicine Support

- Extends the reach of the military physician
- Limitations can be mitigated in underserved remote populations without specialized care
- Force maintenance - Keeps war fighters on station
- Assists primary care givers and first responders with complicated cases
- Real Time emergency consults from specialists
- New possibilities for continuing education or training for isolated or remote health practitioners
- Savings in medical care for remote sites: time, money, and lives

Information Flow

Real time

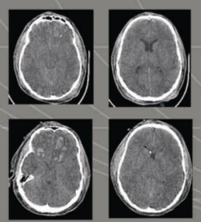
maintain alert procedure for urgent or emergent situations
Scheduled personnel at both stations

- On site PA takes history and performs exam in the video conferencing room
- Surgeon can discuss specific aspects of the history or exam maneuvers
- Radiographs are shown live or previously mailed/ emailed
- Diagnosis & Recommendations recorded in web-based notes system

Store and Forward

reply with normal business hours

Digitized Diagnostic Information



- Text
  - E-mail, fax, scan, computer
- Audio
  - Phone, Satellite, Maritime radio
- Image
  - Video Teleconference, Digital Camera, Scanner, Image Acquisition Source

Participating Sites

Central Receiving Site
- Walter Reed Army Medical Center, DC

Stateside Referring Sites
- Fort Knox, KY
- Fort Bragg, NC
- Jacksonville, FL
- Fort Drum, NY (planned)
- West Point, NY (planned)

Overseas Referring Sites
- Hamburg, Germany
- Support Hospital, Kuwait
- U.S. Army, Afghanistan Field Units
- AFPMC Manila, Philippines

Technology Used

Most Locations Polycom iPower 680 (384 Kbps ISDN H.320 connection)

Sites provided a Canon DZ-3600U Digital Document Camera

Afghanistan VTC Platform

Afghanistan: Wire One Pole Cart with Polycom VSX 7000 Connection: 384 KBPS H.323 protocol

Neurosurgical TeleClinic WRAMC - Ft Knox, KY

- Mostly spine cases based on patient population
- Telemedicine is ideal for initial consultation and post-operative follow up
  - proficient, on site provider
  - logistics coordination
- Selected patients are Medically Evacuated to WRAMC for further evaluation/pre-operative testing
- Clinic visit lasts ~20 minutes/patient
- More than 50 patients have been evaluated by telemedicine in this manner

Battlefield Care

BATTLEFIELD CARE IS DIFFERENT THAN PEACETIME AND CIVILIAN CARE

- Early Care delivered remotely from advanced resources in any environment (arctic, desert, mountains, undersea, space)
- Telemedicine gives the ability to reach higher levels of medical care delayed

VTC Image from Afghanistan

Web-based Application
(In development)

- Auto-Load:
  - Patient Demographics
  - Patient Medications
  - Allergies / Laboratory Results
- Interface with local enterprise Integrated Clinical Database (ICDB)/Health-eForces system
- Support for File Upload (JPG, MPG, PDF, DOC)
- Produces Govt. Standard Consult Form (SF 513)
- Separate servers for Web Services, Application Code, and Database

THP Home Page

File Upload Page

Secure Login Process

Project Results

The U.S. Army Neurosurgical Center provides expert medical consultation and mentoring to clinical staff resulting in:
- Lives Saved
- Reduced Patient Wait Time
- Lower Medical Treatment Costs
- Physicians / Surgeons Better Trained
- Tele-Mentoring of Surgeons Overseas
- Patient Care Extended to Distant Sites
- Increased live access to On-Call Specialist (24/7)